REACTION TIMES INVESTIGATION by Mika Cull

In life reactions times play an important role. We use them for driving a car to playing a sport. Your reaction time can vary for different reasons. It can be due to the amount of practice or athletic skill, your age, your sex or various other reasons.

Sleep is important because it helps us function properly and lets our body rest. The lack of sleep could affect our reaction time. So, how much sleep is needed to get a good reaction time? Do boys need more sleep than girls? Or is your age a factor?

In order to test this hypothesis a reasonably large sample size must be used (190-200). By varying amount of sleep and conducting a controlled experiment we can collect reaction times. We will need to ensure our sample has a mixture of both sexes, and varying ages. The people surveyed will also need to come from different states around the country to ensure amount of education does not affect the results. In particular the targeted were high school students in years 8,9,10. All data was collected from Census at Schools website (www.abs.gov.au/censusatschool)

Modified data sheet is attached

By analysing the data we can test our hypothesis. Finding the measures of central tendency may be useful in making conclusions about our data.

The mean is the mathematical average it considers all the data equally. However some samples that maybe outliers may affect the mean, and these may need to be removed.

The mode is useful for checking the consistency of our results. There may be several similar results (bi modal) and may not be accurate if we collect more data (or remove some data).

The median will help give a central value that is not affected by outliers. The spread of our data may affect the median.

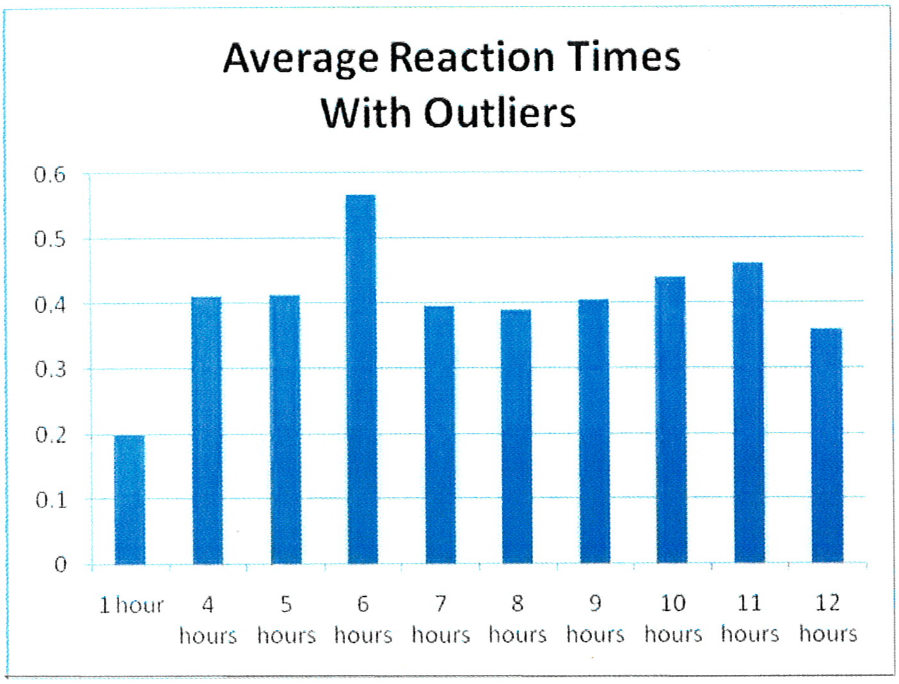
Below are the results for the measures of central tendency.

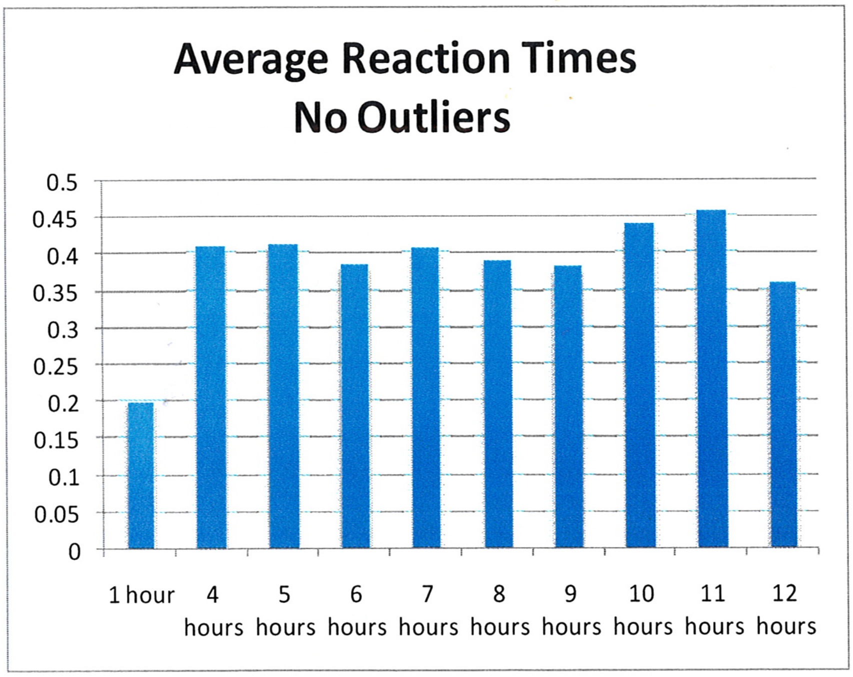
Average	
1 hour	0.2
4 hours	0.41
5 hours	0.413333
6 hours	0.5675
7 hours	0.396
8 hours	0.390645
9 hours	0.4045
10 hours	0.44
11 hours	0.46
12 hours	0.36

Average (without outliers)	
1 hour	0.2
4 hours	0.41
5 hours	0.413333
6 hours	0.387
7 hours	0.406897
8 hours	0.390645
9 hours	0.383559
10 hours	0.44
11 hours	0.46
12 hours	0.36

median of reaction times			median of reaction times (without outliers)			
0.38			0.38			
range of reaction times			range of reaction times (without outliers)			
2.51			0.78			

Using this information the data can be successfully put into a graph.





By collecting data and finding the measures of central tendency it has been found that the hours of sleep does not affect your reaction times. However the results show that having only one hour of sleep can lower your reaction time.

If this investigation was to be conducted again many things could be altered to make this test more accurate and reliable. Like a wider range of ages and also a more reliable source if data. The problem found with the source of data used was that it is not said when the reaction times were taken and it is not possible to see the gender of the person which poses a lot of problems as the amount of sleep might of not affected the reaction times but the gender and time of day.

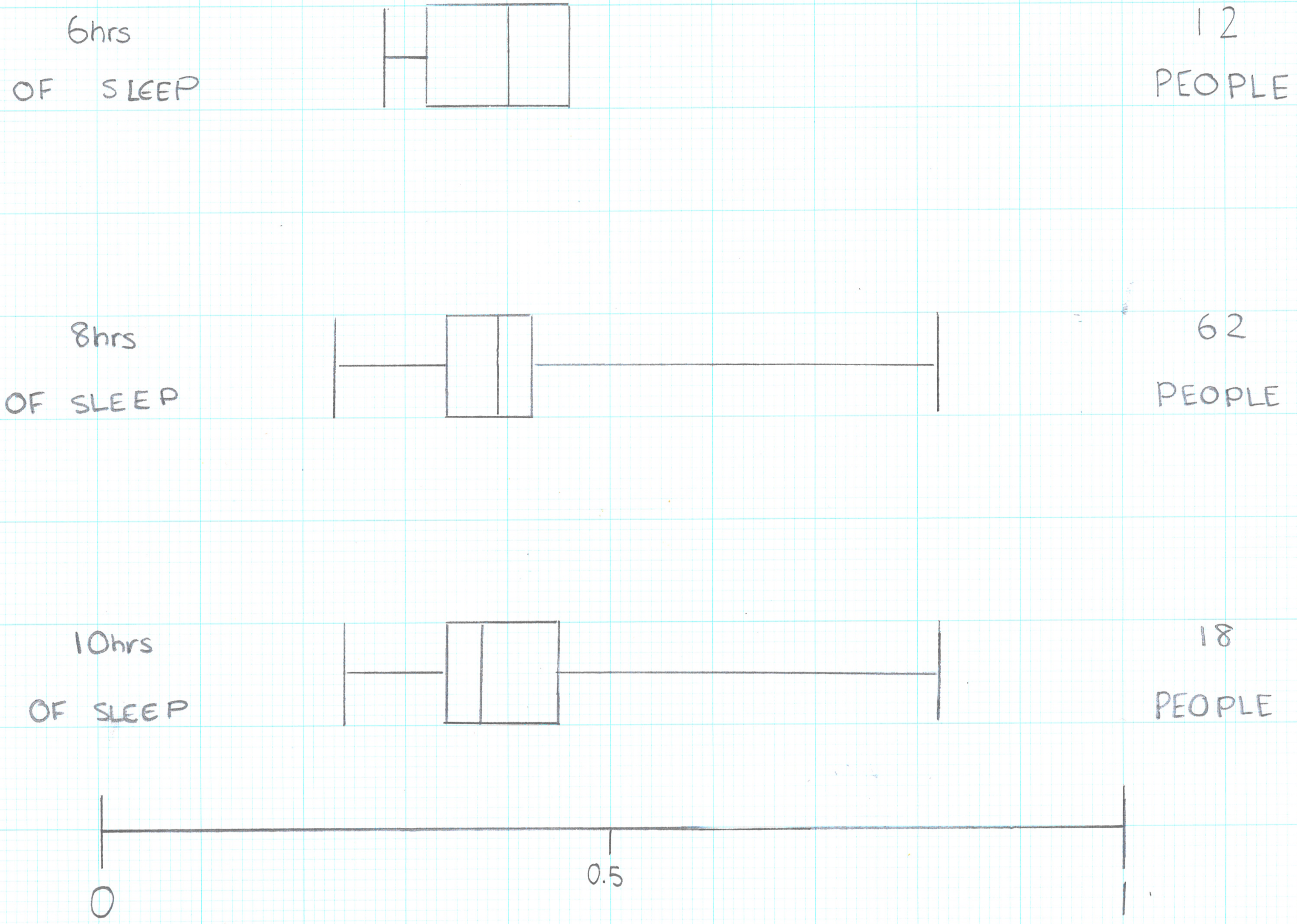
Even though the investigation came up with the following results further investigation by the media show that the lack of sleep can affect your driving. Does this mean that the investigation conducted is not correct? Well this also poses another question which is 'does the way your reaction times are tested also affect the results?'

Many more investigations need to be made to prove this but from the results that have been collected in this investigation, the results stand that the amount of sleep does not affect your reaction time.

Bibliography

www.abs.gov.au/censusatschool

WITHOUT OUTLIERS



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